Methodologies in Regulating Emerging Technologies and a Proposal for the Future

Emerging technologies can be narrowly useful or they can have wide application and be pervasive in society. The shifts in technology in human history have created dramatic changes in society, like the shift from steam energy to petroleum energy and the gas combustion engine. There is no reason to believe that we are not going to encounter another such revolution in the near future. But our societal lessons from this past technological revolutions have taught us very clearly that we must both allow the technology to develop while balancing it against the risks to society. Our challenge is to strike that balance in many new areas of emerging technologies to ensure that we do not lose the benefit of a better quality of life, while taking care to protect against unreasonable risks.

Law has been rightly or wrongly accused of always being behind the progress of technology, and always playing "catch-up". An example of this is the regulation of DNA testing which took a decade for Congress to formulate a regulation for this new technology that raised significant legal issues for society. The challenge to become lawyers and train lawyers to be architects of the regulatory systems rather than merely reacting to the consequences of regulation is a proposed shift in legal education and the ethics of legal profession that is also explored.

As the first Chief Counsel of the Research and Innovative Technology Administration, of the U.S. Department of Transportation and Chair of the White House task force to coordinate the development of a Hydrogen Economy Regulatory Framework among all of the federal government agencies the task of regulating a technology that created a new energy economy was a significant task. An unprecedented process emerged as a model for other emerging technologies and their regulation. The agencies leading the regulation of biofuels used this model to begin a similar task. Much of this work was built on the experience in the Office of Science and Technology Policy and designing part of the biotechnology regulatory framework announcement. The development of a model for this process also involved the lessons learned from other emerging technologies like wind energy. The use of incorporating a field of study, Future Studies, is also explored in the regulation of emerging technologies and an example of its use in its application to nanotechnology regulation is discussed.

Author of *Law and Science* (2001); *Law and Bioterrorism* (2003); *Law and Biotechnology* (2009) and *Nanotechnology Law and Policy* (2011), Sutton brings a professional and academic history to bear on the challenge of regulating emerging technologies.